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The Marketing of Cottage Cheese and Frozen Dairy Products in Kansas, Missouri, and Oklahoma

United States Department of Agriculture Economic Research Service
Marketing Economics Division Marketing Research Report No. 504

Growth Through Agricultural Progress

PREFACE

This report presents data on the marketing of cottage cheese and frozen dairy products by 35 milk processing plants in Kansas, Missouri, and Oklahoma. It is one of several studies of the pricing of surplus graded milk in this area.

The extent to which graded milk is used for cottage cheese and frozen dairy products needs to be considered in any attempt to improve methods for pricing surplus graded milk. In recent years supplies of graded milk have been more than sufficient for fluid needs in the Federal milk marketing areas in these States. Cottage cheese and frozen dairy products are important outlets for this excess supply of milk; these products are integral parts of the operations of most fluid milk plants.

Five related Marketing Research Reports have preceded this one: The Marketing and Pricing Structure for Bulk Sweet Cream in Kansas, Missouri, and Oklahoma Markets (MRR-74); Prices and Other Payments for Milk by Manufacturers in Kansas, Missouri, and Oklahoma Markets (MRR-81); The Marketing and Pricing Structure for Skim Milk Products in Kansas, Missouri, and Oklahoma Markets (MRR-166); The Market for Class II Milk in Oklahoma, Kansas, and Western Missouri (MRR-263); and Butter and Nonfat Dry Milk Production in Diversified Plants in Kansas, Missouri, and Oklahoma (MRR-430). Planned future studies include: Costs in the manufacture of cottage cheese and frozen dairy products in integrated processing plants; and a final report in which the findings on the separate aspects of all the previous studies will be brought into proper relationship with one another and with the major objective of improving the methods of pricing milk in the fluid markets of this area.

Thanks are due to the managers of the plants for their cooperation in providing the information used in this report.

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SUMMARY

Cottage cheese and frozen dairy products are important outlets for surplus graded milk in the Kansas, Missouri, and Oklahoma area. The 35 plants covered by this study used nearly 7 percent of their butterfat and 11 percent of their skim milk for making these products in 1959.

Sales of cottage cheese and frozen dairy products accounted for about 14 percent of estimated total dollar sales in 1959 -- cottage cheese 5 percent and frozen dairy products 9 percent.

All of the plants handled cottage cheese, and all except two handled at least one frozen dairy product. Most of the plants made these products; others purchased them for resale.

Fruit juices and drinks, eggs, and margarine were the nondairy products most commonly sold. Some of these products were processed in the plants; others were purchased for resale.

In 1959, 19 of the 35 plants made 4,361,851 gallons of frozen dairy products. Some plants made less than 10,000 gallons; others made more than 700,000 gallons.

In 1959 also, 28 of the plants made 16,856,398 pounds of cottage cheese. Production varied among the plants even more than for frozen dairy products -- from less than 5,000 pounds to more than 1,500,000 pounds.

All plants used advertising and sales promotion. Sales methods most widely used were direct advertising (newspapers and point-of-purchase), product donations, and routemen contests.

Most of the direct advertising by the plants was for a particular product or products. Cottage cheese and frozen dairy products were frequently advertised although greater emphasis was placed on fluid milk and cream.

One-half of the plants sold cottage cheese in other Federal and non-Federal order markets; only two-fifths of the plants sold frozen dairy products in outside markets. The other plants limited sales of these products to their local markets. Large plants were more dependent on sales in outside markets than were small ones.

Most of the plants sold to both wholesale and retail outlets; fewer sold to other distributors and subdealers. Eight of the plants sold exclusively to wholesale outlets; none sold exclusively to retail outlets.

Wholesale sales were 90 percent of all sales of cottage cheese, retail sales were 9 percent, and platform sales 1 percent. Cottage cheese was sold on 94 percent of all delivery routes.

About one-half of all cottage cheese sold was in 2-pound containers, more than one-third was in 12-ounce containers, and the rest was in other sizes.

More than 80 percent of the frozen dairy products were sold through wholesale outlets, retail sales were 12 percent, and platform sales 6 percent. Frozen dairy products were sold on 68 percent of all routes.

Half-gallon containers were used for about 56 percent of the sales of frozen dairy products. Bulk containers were used for about 18 percent.

THE MARKETING OF COTTAGE CHEESE AND FROZEN DAIRY PRODUCTS IN KANSAS, MISSOURI, AND OKLAHOMA

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INTRODUCTION

Fluid milk plants in the South Central States of Kansas, Missouri, and Oklahoma generally receive more graded milk (that is, milk qualified for fluid use) than they can sell for fluid consumption. The surplus graded milk is made into such products as butter, nonfat dry milk, cottage cheese, ice cream, and other products. 1/

In recent years, the rate of growth in the quantity of graded milk used for cottage cheese and frozen dairy products has exceeded the rate of growth in the quantity used for fluid consumption, but has been less than the rate of growth in the total quantity of surplus graded milk. For the period 1950-57, cottage cheese and ice cream accounted for about 20 percent of the surplus graded milk in 14 markets located in 13 North Central States (including Kansas and Missouri). 2/

Most fluid milk processors in Kansas, Oklahoma, and Missouri use surplus graded milk regularly for making cottage cheese and frozen dairy products. 3/ Probable reasons for doing this include: (1) Best alternative use, (2) profitable to make these products, (3) competition from other processors for sales outlets forces them to make these products from their highest quality milk, and (4) health regulations in some markets require that cottage cheese be made from graded milk and health regulations in most markets prohibit receiving both graded and ungraded milk in the same plant.

Since cottage cheese, ice cream, butter, and other products made from surplus graded milk compete on a price basis with products made from ungraded milk, surplus graded milk has been priced at competitive levels with ungraded milk.

Some producer groups have asked for a higher price for graded milk used in cottage cheese and frozen dairy products than for graded milk used in butter, nonfat dry milk, condensed milk, and other manufactured products. These groups contend that a higher price is justified because cottage cheese and frozen dairy products are the highest value uses for surplus graded milk and because plant managers consider it necessary to make these products from their best quality milk.

1/ Graded milk which distributors do not use as bottled milk is commonly referred to as surplus or Class II milk. Some portion of the surplus constitutes a reserve against daily and seasonal fluctuations in distributors' sales and receipts of graded milk. See Swantz, Alexander. The Marketing and Pricing Structure for Bulk Sweet Cream in Kansas, Missouri, and Oklahoma. U. S. Dept. Agr., Mktg. Res. Rpt. 74. Nov. 1954, p. 5.

2/ Whitted, Stephen Francis. Use of Surplus Grade A Milk in 14 North Central Markets. Unpublished doctoral dissertation, University of Missouri, Columbia, Mo. 1960, pp. 84, 89.

3/ MacPherson, D. D. The Market for Class II Milk in Oklahoma, Kansas, and Western Missouri. U. S. Dept. Agr., Mktg. Res. Rpt. 263. Aug. 1958, p. 11.

However, maintaining a higher price for graded milk used in these products might be difficult. In this area the supply of ungraded milk is more than sufficient for making these products. Only a few markets require cottage cheese to be made from graded milk and none of the markets have any such requirement concerning frozen dairy products. Furthermore, with sufficient price incentives these products would likely be shipped in from other major dairying areas.

If surplus graded milk should be priced significantly higher than ungraded milk, fluid milk plants now making cottage cheese and frozen dairy products from graded milk may take various other courses of action:

(1) Continue to handle these products but --

(a) purchase them from other plants
(b) switch to ungraded milk

(2) Discontinue handling these products.

Fluid milk plants in the South Central area have become more specialized in recent years. Some of the plants are limiting processing operations to fluid milk products only. This is particularly true where plants can economically obtain processed products from specialized processors. Most of these specialized processors use ungraded milk rather than surplus graded milk (see footnote 2). Hence, any significant difference between prices of surplus graded milk and ungraded milk may cause more fluid milk plants to look to specialized processors for their supplies of nonfluid products.

Since fluid milk plants generally process milk on narrow operating margins, any significant increase in prices for surplus graded milk in the South Central area would likely be passed on to the consumer. Products made from surplus graded milk compete, on a price basis, with the same products made from ungraded milk; it would be difficult therefore, to pass much, if any, of the higher cost on as higher prices for manufactured products. Under these circumstances most or all of the higher cost would be passed on as higher selling prices for fluid milk and cream.

Purpose of the Study

The purpose of this study, as in the related reports, is to provide criteria for an improved basis for pricing surplus graded milk. This milk has, historically, been priced in these markets at the same level as ungraded milk on the assumption that it is used for the same products.

However, this assumption is open to examination. Classified pricing, by definition, means pricing on the basis of end use. Consequently, graded milk used for nonfluid purposes can be, and in some instances is, priced at various levels depending on the value of the finished products. Graded milk is priced at the same level as ungraded milk when used for the same products; it is priced higher when used for products that require a higher quality milk.

This study considers two of the uses for surplus graded milk -- cottage cheese and frozen dairy products. Specifically, the study considers the importance of these products according to the quantity of surplus graded milk used by the plants and as sources of income to the plants.

The role of cottage cheese and frozen dairy products in the operations of fluid milk plants is closely related to such factors as: (1) Available raw materials, (2) sales outlets, (3) facilities and production, (4) emphasis placed on advertising and sales promotion, (5) distribution practices, and (6) percentage of total receipts and sales value. Each of these factors will, to some extent, influence a plant's response to changes in costs of raw materials for these products.

The data were also intended to provide a basis for selecting a sample of plants to be used for a complementary study of costs for processing and marketing cottage cheese and frozen dairy products.

Scope and Procedure

This report presents an analysis of data for 35 fluid milk processing plants located in the South Central area. These plants are regulated under Federal milk marketing orders for Greater Kansas City, in Missouri and Kansas; Wichita, in Kansas; the Oklahoma Metropolitan, in Oklahoma; and Neosho Valley, in Kansas and Missouri.

Data collected from the plants were for the calendar year 1959.
Two types of information were obtained:

1. General information

    a. Sources and sales outlets for all products handled.
    b. Advertising and sales promotion.
    c. Customers and routes.
    d. Receipts of milk, cream, and skim milk.

2. Specialized information on cottage cheese and frozen dairy products

    a. Production.
    b. Raw materials used in manufacture.
    c. Methods used in making mixes and freezing frozen dairy products.
    d. Packaging and carton handling.
    e. Quantities sold, by type of outlet, and size of container.
    f. Sales territory.
    g. Percentage of total dollar sales volume.

Data were obtained from regulated fluid milk plants making or purchasing for resale either cottage cheese, frozen dairy products, or both of these products. Information was obtained from those plants which produced the largest volume of these products. In addition, information was obtained from a sample of smaller plants. This was done so that comparisons could be made between operations in different sized plants.

Questionnaires were obtained from 35 plants; 21 questionnaires were complete, 11 almost complete, and 3 relatively incomplete. All of the available data were used in the tables.

Milk, Cream, and Skim Milk Receipts

Current and potential sources of raw materials would affect a plant's response to a price change for surplus graded milk. Cottage cheese and frozen dairy products can also be made from other manufactured products.

All of the 35 plants received graded milk from producers in 1959; also from producers, 10 plants received ungraded milk and 4 received farm-separated cream. In addition, a number of plants received milk, cream, and skim milk from other plants; such receipts are called interplant transfers.

In 1959, plants received from producers 714.8 million pounds of graded milk, 164.9 million pounds of ungraded milk, and 1.3 million pounds of butterfat in farm-separated cream. The supply area for graded milk is shown in figure 1. The plants also received 27.2 million pounds of milk, 5.5 million pounds of cream, and 1 million pounds of skim milk from other plants. These interplant transfers are not additive to producer receipts since they have already been counted once as a receipt from producers.

There were 10 fluid milk plants that had facilities for processing ungraded milk and cream; 5 plants processed more than 95 percent of these receipts.

Graded milk receipts varied among the plants (table 1). The 8 smallest plants received, on an average, only 7 percent as much graded milk as the 8 largest plants.

Fluid milk represents a relatively smaller share of overall plant operations in the 8 largest plants than in the other plants. Graded milk represented only about 70 percent of total milk receipts in the 8 largest plants but 90 percent or more in the other plants.

Shifts might occur in the grade of milk used for cottage cheese and frozen dairy products if a substantial differential were established between the price of surplus graded milk and the price of ungraded milk. Plants now receiving both graded and ungraded milk might use proportionally more of the latter; plants receiving graded milk only might shift to ungraded milk or to other ingredients.

Source and Sales Outlets for Products

Source

A wide variety of products were handled by plants in this study. In addition to fluid milk and cream, products handled by the plants included cottage cheese, frozen dairy products, butter, fruit juices, fruit drinks, frozen foods, eggs, and margarine (see table 2). Not all of these products were handled by all plants; not all products were processed in all plants. Products were often purchased for resale rather than processed in the plants.

All of the plants handled cottage cheese; 28 plants processed their own cottage cheese and 4 of these plants purchased supplemental supplies; 6 plants purchased all of their cottage cheese from other suppliers.

All but 2 of the plants handled frozen dairy products. These products were processed in 22 plants, of which 8 purchased supplementary or complementary supplies. In 9 plants all frozen dairy products were purchased from other suppliers.

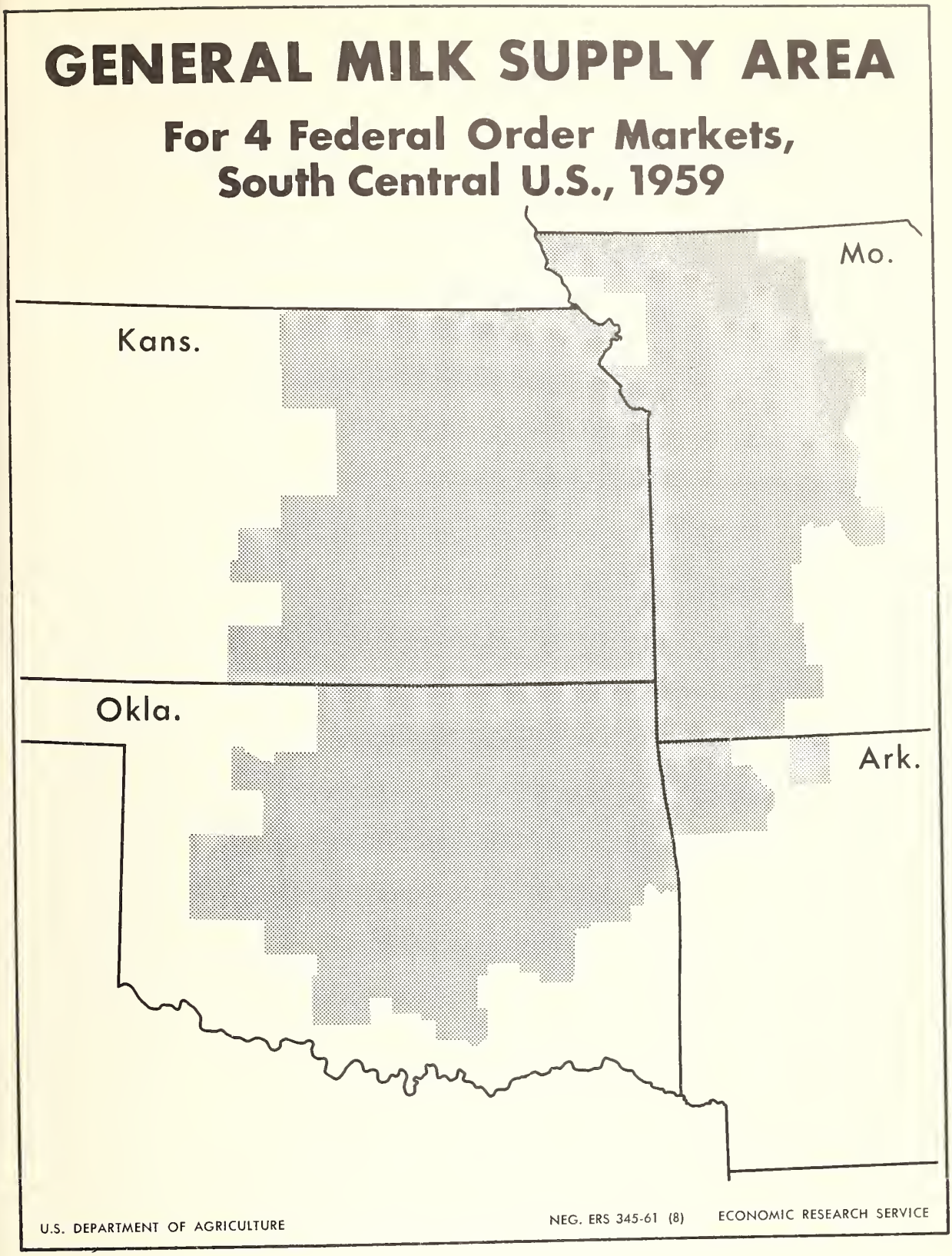
GENERAL MILK SUPPLY AREA
For 4 Federal Order Markets,
South Central U.S., 1959
Mo.
Kans.
Okla.
Ark.
U.S. DEPARTMENT OF AGRICULTURE
NEG. ERS 345-61 (8)
ECONOMIC RESEARCH SERVICE

Figure 1

Table 1.--Receipts of milk, cream, and skim milk, by source, in 32 South Central fluid milk plants, by size of plant, 1959 1/

Type and source of receipts	Group I		Group II		Group III		Group IV		All plants	
	Plants reporting	Average per plant	Plants reporting	Average per plant	Plants reporting	Average per plant	Plants reporting	Average per plant	Plants reporting	Average per plant
	Number	1,000 pounds	Number	1,000 pounds	Number	1,000 pounds	Number	1,000 pounds	Number	1,000 pounds
From producers:										
Graded milk	8	3,271.4	8	12,137.3	8	26,244.9	8	47,691.3	32	22,336.2
Ungraded milk	2/		2/		2/		5	31,403.8	10	16,488.7
Farm-separated cream (butterfat)	2/		--		2/		2/		4	328.0
Interplant transfers: 3/										
Milk	2/		3	1,020.5	3	5,286.8	4	2,036.7	12	2,266.2
Cream	2/		2/		4	1,153.4	5	96.6	11	465.6
Skim milk	2/		2/		--		--		2/	

1/ The 32 plants were divided into groups of 8 beginning with those having the smallest annual receipts.
2/ Fewer than 3 plants reporting.
3/ Interplant transfers are not necessarily additive to producer receipts since a producer receipt at one plant may have ended up as an inplant transfer at another.

Table 2.--Source and sales outlet for products handled by 34 South Central fluid milk plants, 1959

Product	Do not handle	Source		Sales outlets			
		Processed in plants	Purchased for resale	Retail	Wholesale	Other distributors	Sub-dealers
	Plants	Plants	Plants	Plants	Plants	Plants	Plants
Dairy products:							
Fluid milk and cream	--	34	--	23	31	15	13
Cottage cheese:							
Curd	6	1/ 28	--	8	10	9	--
Creamed	--	1/ 28	6	24	34	11	12
Frozen products:							
Ice cream mix	11	21	2	1	15	5	3
Ice cream	2	1/ 21	12	13	28	4	6
Novelties (incl. popsicles)	4	2/ 13	17	18	27	5	5
Ice milk mix	10	3/ 22	2	1	16	2	4
Ice milk	6	21	7	13	25	7	7
Sherbet mix	15	19	--	--	1	1	0
Sherbet	7	18	9	16	24	5	6
Mellorine	25	8	1	5	9	--	--
Water ices	32	2	--	1	2	--	--
Other	32	1	1	1	2	--	--
Other dairy products (butter, cheddar cheese, etc.)	2	4/ 9	4/ 24	21	30	7	7
Nondairy products:							
Frozen foods	29	--	5	5	5	1	--
Eggs	15	2	17	17	11	--	--
Fruit juices and fruit drinks	4	5/ 20	5/ 13	21	29	6	9
Other nondairy products	15	--	19	13	18	4	4

1/ 2 plants purchased supplemental supplies.
2/ 5 plants purchased complementary supplies.
3/ 1 plant purchased supplemental supplies.
4/ 1 plant processed and purchased supplemental supplies.
5/ 3 plants processed and purchased supplemental supplies.

Ice cream, ice milk, and sherbet were the products most commonly made by the plants. Novelties were handled by 30 plants but only 13 processed these products; the remaining plants purchased them for resale. About one-fourth of the plants sold mellorine, mostly processed in their own facilities.

Fruit juices, fruit drinks, eggs, and margarine were the principal nondairy products handled. Fruit juices and drinks were handled by 30 plants; 20 plants processed these products in their own plants and 10 plants purchased them for resale.

Sales Outlets

Sales outlets for cottage cheese and frozen dairy products may influence a plant's response to changes in costs for ingredients. The competitive position of a firm may be described in part in terms of the relative proportion of wholesale, retail, and platform sales.

More plants sold at wholesale than by any other method; 8 plants sold at wholesale exclusively. Most plants sold both wholesale and retail. A few plants also sold at platform to other distributors and subdealers.

Wholesale was the most important sales outlet for frozen dairy products and the least important for eggs, frozen foods, and other nondairy products. Other distributors and subdealers were good outlets for fluid milk, cottage cheese, and ice milk. 4/

Too great dependence on wholesale outlets may be a weak spot in the plants' competitive position. Changes in ingredient costs for plants in a particular market could adversely affect the competitive position of plants in that market.

PRODUCTION OF COTTAGE CHEESE AND FROZEN DAIRY PRODUCTS

Volume and degree of mechanization of operations are factors in competitive position. Response to changes in costs of raw ingredients may, in part, depend on these factors.

Cottage cheese processing was more commonly a part of the plant's operation than frozen dairy products; 80 percent of the plants made cottage cheese, 60 percent made at least one frozen dairy product. Of the 12 plants having no facilities for making frozen dairy products, 8 had facilities for making cottage cheese. Of the 6 plants which had no facilities for making cottage cheese, however, only 2 had facilities for making frozen dairy products.

Cottage Cheese

Raw Materials

Skim milk and cream were the main ingredients used for making cottage cheese. Over one-half of the plants reported using nonfat dry milk regularly to standardize their skim milk at a specified percentage of nonfat milk solids. The rest of the

4/ For more details on sales outlets see table 2.

plants did not regularly standardize their skim milk but did use some nonfat dry milk during periods of milk shortages.

Packaging Methods

Over one-half of the plants packaged cottage cheese by hand, only one-tenth of the plants packaged entirely by machine. More than one-third of the plants used a combination of the two methods; some of these plants packaged small containers by machine but packaged larger and special containers by hand.

Volume of production appeared to be a major factor determining the degree of mechanization in packaging cottage cheese. Production averaged 1.3 million pounds in plants packaging by machine, 0.8 million pounds in plants using both machine and hand methods, and less than 0.3 million pounds in plants packaging entirely by hand.

Production

About 16.9 million pounds of cottage cheese were made in 28 plants in 1959 (table 3). Production per plant ranged from less than 5,000 pounds to nearly 1,600,000 pounds. Production in the largest plant was equal to production of the 11 smallest plants; 17 of the plants produced less than the average for all plants.

Cottage cheese production in both March and June was about 300,000 pounds or one-fourth higher than November production. Production rose at its fastest rate in March -- production in this month was 18 percent higher than in February (see table 4).

Frozen Dairy Products

Mix-Making Operations

Ingredients used in mixes.--Graded milk and cream and nonfat dry milk were the ingredients most commonly used in mixes for making frozen dairy product. All but 3 of the plants used graded milk and cream; all but 2 plants used nonfat dry milk. Ungraded milk and cream was also used in 4 of the plants using graded milk and cream; 1 plant used no graded milk. Other ingredients were condensed skim milk and butter.

Most plants used only nonfat dry milk for building up the nonfat milk solids content of frozen dairy product mixes. Other plants used both condensed skim milk and nonfat dry milk regularly. A few used only condensed skim milk except during shortages, when they shifted to nonfat dry milk.

Although 8 plants made mellorine, no data were collected on the ingredients used in making this product.

Methods used in making mixes.--Three-fourths of the plants made frozen products mixes by the batch method; the other plants used the continuous method. The plants making the larger quantities of mixes used the batch method and not, as might be expected, the continuous method.

Table 3.--Cottage cheese production in 28 South Central fluid milk plants, by size of plant, 1959

Size group	Plants	Production	Average production per plant
	Number	Pounds	Pounds
I	7	567,037	81,005
II	7	2,305,414	329,345
III	7	4,836,338	690,905
IV	7	9,147,609	1,306,801
Total and average	28	16,856,398	602,014

Freezing, Packaging, and Handling

Although the batch method was commonly used for making mixes, most plants made the finished product by the continuous method of freezing. Almost two-thirds of the plants used the continuous method and about one-fifth used the batch method. The rest of the plants used both methods; these plants used the batch method for sherbet and special orders.

The freezing method used by the plants was related to the size of plant output. All plants with annual volumes of more than 180,000 gallons of frozen product used the continuous method exclusively. With but one exception, plants using only the batch method made less than 35,000 gallons.

None of the plants had fully mechanized systems for packaging and handling the cartons. In half of the plants some of these operations were mechanized, but in the other half all of these operations were performed by hand.

Production

Almost 4.4 million gallons of frozen dairy products were made in 19 plants in 1959 (see table 4). Among these plants production varied from less than 10,000 gallons to over 1.2 million gallons. In other words, 1 plant produced about one-fourth of the total and equaled the production of 14 of the smallest plants. Of the 19 plants, 13 produced less than the average of 229,571 gallons for all plants.

Production of frozen dairy products was more seasonal than the production of cottage cheese. June production of 0.55 million gallons of frozen dairy products was 1 3/4 times larger than January production. June cottage cheese production was only 1/4 higher than November production.

Twelve plants purchased all of their frozen dairy products for resale. Lack of facilities, lower cost, and a combination of these two factors were the reasons most given for purchasing for resale rather than making these products in their own plant. Only 5 of the 12 plants reported the quantities of frozen dairy products sold. Sales in these plants ranged from about 5,000 gallons to 96,000 gallons; average for the plants was 41,914 gallons. Except for one plant, the only reason

Table 4.--Production of cottage cheese and frozen dairy products in South Central fluid milk plants, by months, 1959

Month	Cottage cheese (28 plants)				Frozen dairy products (19 plants)	
	Dry curd		Creamed			
	Pounds	Percent	Pounds	Percent	Gallons	Percent
January	825,479	7.2	1,250,781	7.4	201,743	4.6
February	875,101	7.6	1,298,425	7.7	249,780	5.7
March	1,041,381	9.1	1,532,314	9.1	340,289	7.8
April	970,979	8.5	1,451,388	8.6	360,391	8.3
May	1,023,757	8.9	1,501,722	8.9	470,363	10.8
June	1,047,748	9.1	1,536,571	9.1	550,801	12.6
July	1,007,304	8.8	1,472,832	8.7	522,726	12.0
August	985,226	8.6	1,439,512	8.6	515,651	11.8
September	982,711	8.5	1,448,165	8.6	431,503	9.9
October	960,815	8.4	1,414,878	8.4	262,471	6.0
November	848,569	7.4	1,231,802	7.3	213,485	4.9
December	907,633	7.9	1,278,008	7.6	242,648	5.6
Total	11,476,703	100.0	16,856,398	100.0	4,361,851	100.0

given for not making these products was a lack of facilities.

Most of the cottage cheese and frozen dairy products was produced in a few plants. Processing in these plants was highly mechanized; investments in machinery and equipment were substantial. Under these conditions plants are sensitive to higher costs of raw ingredients and are likely to seek sources of lower cost raw ingredients.

ADVERTISING AND SALES PROMOTION

Advertising and promoting indicates the emphasis placed on selling specific products. This emphasis may, to some degree, determine response to changes in raw ingredient costs.

Over three-fourths of the firms used routemen and sales managers for advertising and sales promotion work. Fewer firms used full-time salesmen and outside sales agencies. Plant managers also devoted much of their time to this phase of their operations.

Size of plant appears to be a determining factor for employing sales managers, salesmen, and outside sales agencies (table 5). Plants receiving more than 10 million pounds of milk more frequently had personnel specialized in advertising and sales promotion on their payroll than the smaller plants. Most plants, regardless of size, used their routemen for promoting sales.

All of the plants used direct advertising in promoting the sales of their products -- other methods were used less frequently. More than one-half of the plants used product donations and routemen contests. Many plants used advertising allowances and store demonstrations.

Methods used by the plants for advertising and promoting sales were related to size of plant operations (table 6). More plants with milk receipts over 10 million pounds used advertising allowances, routemen contests, and store demonstrations than smaller plants.

Newspapers, magazines, and point-of-purchase materials were the direct advertising media most used by the plants (table 7). All plants but 2 advertised their products in newspapers and magazines; all but 3 plants used point-of-purchase materials. Other direct advertising media were used by many of the plants.

Most advertising was for specific products, although there was some institutional advertising. Cottage cheese and frozen dairy products played an important part in the plants' advertising program, but greater emphasis was placed on advertising fluid milk than any other product. This would be expected since over 80 percent of the plants derived their main source of income from this product.

Increased costs of ingredients for cottage cheese and frozen dairy products would change the relative profitability of these products and might result in changing the product emphasis in selling efforts. Some plants might intensify selling efforts to offset lower unit profits or to offset price disadvantages; other plants might curtail promotion of products that would then be relatively unprofitable.

Table 5.--32 South Central fluid milk plants employing advertising and sales promotion personnel, by size of plant, 1959 1/

Total milk receipts	Sales manager	Routemen	Salesmen	Outside sales agencies
	Plants	Plants	Plants	Plants
0.5 - 9.8 mil. lbs..	2	7	2	2
9.9 - 18.4 mil. lbs..	6	7	5	5
21.8 - 35.2 mil. lbs..	8	5	6	5
48.4 - 124.6 mil. lbs..	8	7	7	5
Total.....	24	26	20	17

1/ The 32 plants were divided into groups of 8 beginning with those having the smallest annual receipts.

Table 6.--32 South Central fluid milk plants using specified promotion methods, by size of plant, 1959 1/

Total milk receipts	Direct advertising	Advertising allowances	Routemen's contests	Product donations	Other
	Plants	Plants	Plants	Plants	Plants
0.5 - 9.8 mil. lbs.	8	3	3	6	1
9.9 - 18.4 mil. lbs.	8	3	5	6	3
21.8 - 35.2 mil. lbs.	8	1	5	5	5
48.4 - 124.6 mil. lbs.	8	6	6	5	3
Total.....	32	13	19	22	12

1/ The 32 plants were divided into groups of 8 beginning with those having the smallest annual receipts.

DISTRIBUTION PRACTICES

Sales in markets outside the area and the kinds of sales outlets used may determine the response to changes in raw ingredients cost.

Cottage cheese was sold in outside markets by about 52 percent of all plants handling this product; of these plants, one-fourth sold in other Federal order markets, one-fourth sold in non-Federal order markets, and one-half sold in both of these types of markets. The plants selling in outside markets handled 11.9 million pounds of cottage cheese; plants selling only in local markets handled 3.4 million pounds.

Frozen dairy products were sold in outside markets by about 38 percent of all plants handling these products; of these plants, one-fifth sold in other Federal

Table 7.--34 South Central fluid milk plants using direct advertising media for specified products, 1959

Media	Do not use	Company name (no specific product)	Cottage cheese	Frozen dairy 1/ products	Other specific products 2/
	Plants	Plants	Plants	Plants	Plants
Newspapers and magazines	2	15	27	25	28
Point-of-purchase	3	9	27	21	28
Radio and television	12	9	19	17	17
Dealer signs (store)	20	9	4	6	5
Billboards and electric signs	13	12	13	10	14
Leaflets, booklets, etc	11	6	21	16	21
Other	30	3	1	1	2

1/ 3 plants did not handle frozen dairy products; sales outlets for 1 of these plants were handled by a subsidiary plant.
2/ Particularly fluid milk and cream.

order markets, one-fifth sold in non-Federal order markets, and three-fifths sold in both of these types of markets. The plants selling in outside markets handled 3.4 million gallons of frozen dairy products as compared to 1.3 million gallons for plants selling in local markets only.

Most of the plants distributed their products at both wholesale and retail. Although 8 plants sold at wholesale only, no plant sold at retail only.

In 1959, the 34 plants operated 939 delivery routes and served approximately 150,000 customers. The retail-home delivery part of the plants' business accounted for most of these routes and customers (table 8).

Cottage Cheese

Cottage cheese was sold on approximately 94 percent of all delivery routes operated by the plants. If the specialized frozen dairy product routes are excluded, cottage cheese was a standard item on 98 percent of the routes.

A total of 13.6 million pounds of cottage cheese was sold by 23 plants in 1959 (table 9). About 90 percent of all cottage cheese was sold on wholesale routes, 9 percent on retail routes, and 1 percent at platform.

The average price received per pound for cottage cheese was 22 cents. At retail, prices averaged 29.7 cents -- 8.5 cents more than for wholesale sales and 12.4 cents more than for platform sales.

Most of the cottage cheese was sold in 2-pound and 12-ounce containers (table 10). Sales in these container sizes accounted for over 80 percent of total sales.

Table 8.--Customers and sales routes, 34 South Central fluid milk plants, 1959 1/

Type of route	Number of customers	Number of routes	Average number of customers per route	Number of routes selling cottage cheese	Number of routes selling frozen dairy products
Retail milk-home delivery	130,211	476	274	475	445
Wholesale milk	8,155	274	30	273	7
Mixed retail-wholesale milk	3,790	18	211	18	11
Frozen dairy products-wholesale	1,818	41	39	--	41
Mixed frozen dairy products-milk-wholesale	3,973	130	31	113	130
Total	147,947	939	158	879	634

1/ A route is the total deliveries of one routeman. For example, if a routeman delivers to one group of customers on Monday-Wednesday-Friday and to another group of customers on Tuesday-Thursday-Saturday, this is one route.

Table 9.--Sales of cottage cheese by 23 South Central fluid milk plants through different sales outlets, and average prices received, 1959

Sales outlets	Sales	Price per pound
	Pounds	Cents
Retail 1/	1,261,726	29.7
Wholesale	12,246,492	21.2
Platform 2/	112,673	17.3
Total and weighted average	13,620,891	22.0

1/ 8 of the 23 plants had no retail sales.
2/ 10 of the 23 plants reported having platform sales to processor-distributors and subdealers, but only 3 plants could give the amounts sold.

Table 10.--Sales of cottage cheese, by 29 South Central fluid milk plants by size of container, 1959

Container size	Volume in pounds
Bulk (larger than 5 pounds)	212,804
5 pound	1,263,990
2 pound	7,333,650
1 pound	1,130,678
12-ounce	5,134,986
Other 1/	21,133
Total	15,097,241

1/ Includes 4-pound, 8-ounce, and other special-size containers.

Sales of dry curd cottage cheese by 10 plants amounted to about 138,000 pounds -- about 55 percent in bulk containers and 45 percent in smaller containers. 5/ Dry curd cottage cheese sales were only 2 percent of total cottage cheese sales; for individual plants, these sales varied from 19 percent to 0.1 percent.

Frozen Dairy Products

Frozen dairy products were sold on 68 percent of all delivery routes. Hence these products were not a part of the product lines for routes to the extent that cottage cheese was. Most of this difference is due to the fact that only 7 of the 274 wholesale milk routes carried frozen dairy products.

5/ Data for sales of dry curd cottage cheese were lacking in many plants although most plants reported selling small amounts.

Sales of frozen dairy products by 14 plants totaled 3.1 million gallons (table 11). The bulk, 82 percent, was sold on wholesale routes -- although these routes were only 30 percent of all routes selling these products. The other 70 percent of the routes sold only 12 percent of the total volume. Platform sales accounted for the remaining 6 percent.

Prices received per gallon of frozen dairy product averaged $1.38 for 14 plants (table 11). At retail, prices were $1.76 -- $0.43 higher than wholesale prices and $0.40 higher than platform sales.

The half-gallon was the most popular size of container; almost 56 percent of the total volume of frozen dairy products was sold in half-gallons (table 12). Bulk containers, next in frequency of use, accounted for almost 18 percent of total sales volume. No other container size accounted for more than 12 percent of total sales.

Outside markets were important to the major processors of cottage cheese and frozen dairy products. Also, over 80 percent of the sales of these products went to wholesale outlets. Because of these factors a plant's competitive position would be substantially altered by a change in raw ingredients cost.

Table 11.--Sales of frozen dairy products by 14 South Central fluid milk plants through different sales outlets, and average prices received, 1959

Sales outlets	Sales	Price per gallon
	Gallons	Dollars
Retail (8 plants)	366,247	1.76
Wholesale	2,583,969	1.33
Platform (4 plants)	178,164	1.36
Total and weighted average	3,128,380	1.38

Table 12.--Sales of frozen dairy products by 12 South Central fluid milk plants, by size of container, 1959

Container size	Volume in gallons
Bulk (larger than 1 gallon)	373,252
Gallon	41,233
Half-gallon	1,181,875
Quart	74,254
Pint	248,721
Novelties, all sizes	197,081
Total	2,116,416

IMPORTANCE OF COTTAGE CHEESE AND FROZEN DAIRY PRODUCTS IN THE PLANTS' OPERATIONS

One of the objectives of this study was to determine the importance of cottage cheese and frozen dairy products as uses of surplus graded milk in the South Central area. A product's importance to the overall operation of a plant may be described in terms of (1) the volume of milk used in making the product, and (2) the percentage of the plant's returns derived from the sale of the product. These factors may determine the response of a plant to changes in costs of raw ingredients.

Data were obtained from plants which received about one-half of all graded milk in the four Federal order markets. The utilization figures for cottage cheese and frozen dairy products should therefore be fairly representative of all plants in these markets.

Utilization of Butterfat and Skim Milk

In 1959 the making of cottage cheese and frozen dairy products at 31 plants accounted for 6.6 percent of the butterfat and 11.3 percent of the skim milk in total receipts of milk from producers (table 13). These plants received 863 million pounds of milk from producers in 1959. The butterfat test of this milk averaged 3.70 percent. Most of the milk, 81.2 percent, was received from producers of graded milk.

Plants receiving only graded milk and those receiving more than two-thirds graded milk used about the same proportion of their butterfat and skim milk for making cottage cheese and frozen dairy products. Plants receiving less than two-thirds graded milk used a much smaller proportion of these raw materials for making these products.

Sales of Cottage Cheese and Frozen Dairy Products

Sales of cottage cheese and frozen dairy products accounted for approximately 14 percent of total dollar sales for 25 plants (table 14). Cottage cheese was about 5 percent and frozen dairy products 9 percent.

Sales of cottage cheese and frozen dairy products represented about the same proportion of total dollar sales in plants having only graded milk receipts as in plants having over two-thirds of their receipts as graded milk. For these plants, cottage cheese sales represented 5 to 6 percent and frozen dairy products sales 11 to 12 percent of total dollar sales.

Sales of cottage cheese and frozen dairy products were only about 2.5 percent of total dollar sales in plants receiving less than two-thirds of their milk from graded producers. The 2.5 percent for these products consists of 1.4 percent for cottage cheese, and 1.1 percent for frozen dairy products.

Variations in the percentage of cottage cheese and frozen dairy products made in the plant or purchased for resale may determine the response to changes in raw ingredient costs. Plants which purchase these products for resale may be little affected unless they are forced to pay higher prices. Should this happen, some may change to cheaper sources -- either within or outside the market.

For plants which make their own cottage cheese and frozen dairy products, response to changes in raw ingredient costs may depend on the importance of the products in overall operations. Plants in which these products are of major importance are likely to be sensitive to changes in ingredient costs. This is particularly true if a major part of the products are sold in outside markets.

CONCLUSIONS

The price that processors will pay for graded milk used in cottage cheese and frozen dairy products depends upon the profitableness of handling these products, alternate sources of raw materials or finished products, and competitive position. Profitableness of handling cottage cheese and frozen dairy products was not covered in this study; the other two factors were.

Sources other than graded milk were extensive both in practice and potentially. Of the 34 plants handling cottage cheese, 6 purchased the finished product from other processors, 4 purchased supplemental supplies; over half used nonfat dry milk to increase yield on a year-round basis, others during periods of milk storage. Of the 31 plants handling frozen dairy products, 9 purchased finished products from other processors, 8 purchased supplemental supplies, and 17 purchased novelties; 3 plants used no graded milk or cream, 4 used both graded and ungraded milk and cream, 22 used nonfat dry milk to increase yield, and 8 plants used condensed skim milk. With sufficient cost incentive the plants might shift to use of more ungraded milk, concentrated ingredients, or outside sources of finished products from either plants within the area using ungraded milk or plants in other areas.

The competitive position of the processors may be vulnerable because of two factors: (1) Most of the larger processors sold substantial amounts of cottage cheese and frozen dairy products outside of their local markets; and (2) more than 80 percent of the sales of these products were made to wholesale outlets. Under these circumstances, it would be difficult to offset increased ingredient costs by increasing selling prices.

Alternatives to shifting to lower cost ingredients or increasing selling prices might appear to be for processors either to (1) absorb higher costs for graded milk, or (2) offset the higher costs by increasing the selling price of fluid items. The first alternative depends upon the ability (overall profitableness of operations) and willingness of the processors. The second alternative depends upon the importance of sales of fluid products outside the local market, current or potential competition from processors in other areas, and perhaps to some extent on the willingness to bring downward pressure on the price of milk for fluid use.

Table 13.--Receipts of butterfat and skim milk and utilization in cottage cheese and frozen dairy products, 31 South Central fluid milk plants, by source of supply, 1959 1/

Source of milk supply	Plants	Receipts		Utilization			
				Butterfat		Skim milk	
		Butterfat 2/	Skim milk 2/	Cottage cheese	Frozen dairy products	Cottage cheese	Frozen dairy products
	Number	Mil. lb.	Mil. lb.	Percent	Percent	Percent	Percent
All from graded producers	22	16.3	431.6	2.9	5.8	12.5	2.6
Two-thirds or more from graded producers	6	6.2	157.5	3.0	7.4	11.7	3.6
Less than two-thirds from graded producers	3	9.5	241.9	.5	.0	2.1	.0
Total	31	32.0	831.0	2.2	4.4	9.3	2.0

1/ Not all plants made both kinds of products; 27 plants made cottage cheese and 18 made frozen products.
2/ Amounts available according to butterfat tests.

Table 14.--Sales of cottage cheese and frozen dairy products and percentage each was of total sales, 25 South Central fluid milk plants, by source of supply, 1959

Source of milk supply	Plants	Total estimated sales	Percent of total sales from	
			Cottage cheese	Frozen dairy products
	Number	Dollars	Percent	Percent
All from graded producers	17	36,666,130	5.96	11.85
Two-thirds or more from graded producers	5	16,455,024	5.19	11.90
Less than two-thirds from graded producers	3	17,372,100	1.43	1.12
Total	25	70,493,254	4.67	9.22

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